Bellwork: 5/1/13

Simplify each expression:

1) $\frac{\sqrt[3]{144x^{12}y^7z^3}}{\sqrt[3]{3x^5yz^3}}$

$\sqrt[3]{48x^7y^6}$

48 → 6 8 → 32 48 → 2 3

$2x^2y^2\sqrt[3]{6x}$

2) $(4 - 2\sqrt{3})(3 + 5\sqrt{3})$

$12 + 20\sqrt{3} - 6\sqrt{3} - 10\sqrt{9}$ (-30)

$-18 + 14\sqrt{3}$

Section : 6.3 Cont... Pg 20

Obj: To divide radical expressions with conjugates

Dividing Radicals:

*** You should never have a radical in the denominator!***

Step 1: multiply the denominator by either the root that appears or by conjugate

Step 2: whatever you do to bottom, do to top.

Step 3: Simplify if possible.

1.) $\frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}}{\sqrt{9}} = \boxed{\frac{\sqrt{3}}{3}}$

2.) $\frac{2}{\sqrt{6}} \cdot \frac{\sqrt{6}}{\sqrt{6}} = \frac{2\sqrt{6}}{\sqrt{36}}$

$= \frac{2\sqrt{6}}{6} = \boxed{\frac{1\sqrt{6}}{3} \text{ or } \frac{\sqrt{6}}{3}}$

3.) $\frac{2}{(1+\sqrt{3})} \cdot \frac{(1-\sqrt{3})}{(1-\sqrt{3})} = \frac{2(1-\sqrt{3})}{-2}$

Bottom: $= -1(1-\sqrt{3})$

$(1+\sqrt{3})(1-\sqrt{3})$

$1 - \cancel{\sqrt{3}} + \cancel{\sqrt{3}} - \sqrt{9} = \boxed{-1+\sqrt{3}}$

$1 - 3 = -2$

4.) $\frac{4}{(3-\sqrt{7})} \cdot \frac{(3+\sqrt{7})}{(3+\sqrt{7})} = \frac{4(3+\sqrt{7})}{2}$

Bottom: $\frac{2(3+\sqrt{7})}{\boxed{6+2\sqrt{7}}}$

$(3-\sqrt{7})(3+\sqrt{7})$

$9 + \cancel{3\sqrt{7}} - \cancel{3\sqrt{7}} - \sqrt{49}$

$9 - 7 = 2$

You try:

5.) $\frac{3}{\sqrt{7}} \cdot \frac{\sqrt{7}}{\sqrt{7}} = \frac{3\sqrt{7}}{\sqrt{49}} = \boxed{\frac{3\sqrt{7}}{7}}$

6.) $\frac{3}{(2-3\sqrt{2})} \cdot \frac{(2+3\sqrt{2})}{(2+3\sqrt{2})} = \frac{3(2+3\sqrt{2})}{-14}$

$\boxed{\frac{6+9\sqrt{2}}{-14}}$

Bottom:

$(2-3\sqrt{2})(2+3\sqrt{2})$

$4 + \cancel{6\sqrt{2}} - \cancel{6\sqrt{2}} - 9\sqrt{4}$ (2)

$4 - 18 = -14$